1. (twice amended) An optical temperature sensor, said sensor comprising:

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an emitter having a selective energy emission band, said emitter converting thermal energy to energy within said emission band in response to a temperature of said emitter;

a light pipe having a first end and a second end, said first end communicating with said emitter;

an optical bandpass filter communicating with said second end, said filter having a pass band within said emission band; and

a detector communicating with said filter, said detector detecting said emitted energy as a measure of said temperature.

REMARKS

The Examiner has rejected claims 1-3, 5, 10 and 12 as being anticipated by Mihalczo et al. under 35 U.S.C. '102(b) Mihalczo et al. shows the use of two phosphors in a temperature sensor. The first absorbs neutrons and emits charged particles that then produce scintillations in the second phosphor (col. 2, lines 60-63). The relationship between the emissions of these two phosphors can be used to determine temperature. Neither of these phosphors convert thermal energy to energy within a selective energy emission band as in the presently claimed invention. Instead one phosphor absorbs neutrons and the other absorbs

charged particles to cause emission. The present invention uses a sensor that absorbs thermal energy and emits it in a narrower band: "... said emitter converting thermal energy to energy within said emission band in response to a temperature of said emitter" (claim 1, lines 3-5). The sensor of the present invention actually converts its own thermal energy to energy within the emission band. It is respectfully submitted that the present invention is not anticipated by Mihalczo et al.

The Examiner has rejected claim 1 as being anticipated by Wissinger under 35 U.S.C. '102(b). Wissinger uses solid state laser diodes to measure temperature. The emission characteristics of the diodes change with respect to their temperature. However, the emissions themselves are caused by the application of electrical power to the diodes (Fig. 2). The diodes do not convert thermal energy to energy within a selective energy emission band as in the presently claimed invention. Instead, the emission characteristics of an electrically powered diode are altered by temperature.

The present invention uses a sensor that absorbs thermal energy and emits it in a narrower band: "said emitter converting thermal energy to energy within said emission band in response to a temperature of said emitter". The sensor of the present invention actually converts its own thermal energy to energy within the emission band. It is respectfully submitted that the present invention is not anticipated by Wissinger.

The Examiner has rejected claims 1-3, 10 and 16-17 as being anticipated by Tregay under 35 U.S.C. '102(b). Tregay shows a sensor made by placing a sensing element within an optical fiber.

The physical configuration of the cavity for the sensing element can provide various advantages when the temperature is measured. The light from the sensor travels along the fiber, through a bandpass filter to a detector.

The present invention includes an emitter having a selective energy emission band and an optical bandpass filter having a pass band within that emission band. There is no teaching in Tregay that the bandpass filter is to be matched to the emission spectra of the emitter. In fact, Tregay even teaches using two filters about two different wavelengths in make measurements (col. 5, line 67 to col. 6, line 12. In Tregay, there is specified no optical bandpass filter having a pass band within the emission band.

It is respectfully submitted that the present invention is not anticipated by Tregay.

The Examiner has rejected claims 4, 7-9, 11, and 13-17 as being unpatentable over Mihalczo et al. in view of other references under 35 U.S.C. '103(a). It is respectfully submitted that this is not the case.

Referring to the discussion above concerning Mihalczo et al. it can be seen that because Mihalczo et al. does not teach an emitter that converts <u>thermal</u> energy to energy within the emission band, it cannot combined with either Rusanov et al. with respect to claim 11, or Milstein et al. with respect to the other claims, to make the present invention obvious to one skilled in the art.

It is respectfully submitted that claims 4, 7-9, and 13-17 are patentable over Mihalczo et al. in view of Milstein et al. and

claim 11 is patentable over Mihalczo et al. in view of Rusanov et al.

In view of the foregoing amendment and remarks, it is respectfully submitted that the application is now in condition for allowance and notification of same is requested.

Please charge any fees which are required by this communication to our Deposit Account No. 14-0116.

Respectfully submitted,

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Date: 8-28-2001

INDICATION OF REVISIONS TO CLAIM 1 - SERIAL NO. 09/323,650

1. (twice amended) An optical temperature sensor, said sensor comprising:

an emitter having a selective energy emission band, said emitter converting thermal energy to energy within said emission band in response to a temperature of said emitter;

a light pipe having a first end and a second end, said first end communicating with said emitter;

an optical bandpass filter communicating with said second end, said filter having a pass band [corresponding to] <u>within</u> said emission band; and

a detector communicating with said filter, said detector detecting said emitted energy as a measure of said temperature.

Sent to Addressee using Express Mailing Label No. EJ 596690060 US on this 28 day of August, 2001.

Kent N Stone

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